

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 93-072
UPDATED WASTE DISCHARGE REQUIREMENTS

POTRERO HILLS LANDFILL, INC.,
FAIRFIELD, SOLANO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

PURPOSE OF UPDATE ORDER

1. In September 2, 1992, Potrero Hills Sanitary Landfill (PHLF) submitted proposed revisions to the detection monitoring program for PHLF in accordance with the requirements of the California Code of Regulations (CCR), Title 23, Chapter 15, Article 5 and the provisions of Title 40 Part 258 of the Code of Federal Regulations (Subtitle D).

This Order primarily updates, the groundwater monitoring program and liner requirements for the PHLF operation consistent with the requirements of Article 5, Title 23, Division 3, Chapter 15 of the California Code of Regulations and the provisions of Title 40 Part 258 of the Code of Federal Regulations (Subtitle D).

2. Potrero Hills Landfill, Inc., the site legal owner and the landfill operator, (hereinafter referred to as the discharger) operates a Class III landfill on 320 acres southeast of the City of Fairfield in Solano County. The project site as shown on Attachment A, which is incorporated herein and made a part of this Order, is located South of Travis Air Force Base and approximately one mile south of State Highway 12 at the southern end of Emmington Road.
3. The landfill has received waste since August, 1986 and is currently permitted to occupy 190 acres of the 320 acre site. The landfill has an estimated lifetime of approximately 30 to 57 years and waste capacity of 16.4 million cubic yards as of March 1992. This landfill will continue to serve the longtime disposal needs of Fairfield, Suisun City and Green Valley unincorporated areas of Solano County. The landfill also serves other areas as a regional solid waste disposal facility.
4. The Board on October 16, 1985, adopted Order No. 85-121

prescribing Waste Discharge Requirements for the disposal of Class III waste in Potrero Hills landfill. This Order updates Order No. 85-121 in accordance with the CCR, Title 23, Chapter 15, Article 5 and the provisions of Title 40 Part 258 of the Code of Federal Regulations (Subtitle D).

5. Sections 2533(b), (c), (d) and (e) of Chapter 15 states that new Class III and existing Class II-2 shall be sited where soil characteristics, distance from groundwater, and other factors will ensure no impairment of beneficial uses of surface water or of groundwater beneath or adjacent to the landfill. These factors have been evaluated as indicated below:
 - a. size of the waste management unit.
 - b. permeability and transmissivity of underlying soils.
 - c. depth to groundwater and variations in depth to groundwater.
 - d. background quality of groundwater.
 - e. current and anticipated use of groundwater.
 - f. annual precipitation.
 - g. potential for ground rupture.
 - h. potential for rapid geologic change.

WASTES AND THEIR CLASSIFICATION

6. The discharger proposes to continue to discharge the following wastes to the landfill:
 - a. Municipal solid Waste - classified as " nonhazardous Solid Wastes or inert Wastes" using the criteria set forth in Chapter 15.
 - b. Nonhazardous automobile shredder Waste - acceptable upon Board's approval.
 - c. Asbestos - consistent with Title 22 of the Health and Safety Code (Section 25143.7).
 - d. Sewage Sludge pursuant to Section 2523(c) of Chapter 15. Provision 10 of this order requires the discharger to submit a Sludge Management Plan prior to accepting Sludge

for disposal at the landfill.

- e. Ash - acceptable upon Board's approval.
 - f. Agricultural waste, dead animals, construction and demolition debris, liquids (includes septage) and Industrial waste.
7. Leachate from the landfill's leachate collection and recovery system will be disposed of on-site by discharging leachate over dormant portions of the intermediate covered landfill areas during the summer to evaporate the water.

Effective October 1, 1993, recirculation of leachate and gas condensate will be limited to areas of the landfill equipped with liner systems and a leachate collection and recovery system that meet Subtitle D and Chapter 15 requirements.

SITE DESCRIPTION

8. The landfill is located in the central valley of the Potrero Hills. This valley was formed by a large geologic fold structure referred to as the Potrero Hills Anticline. The core of this anticline is underlain by approximately 700 feet of low permeability siltstone and claystone of the Capay shale and an unnamed shale. The majority of the landfill is underlain by these claystone/shale sediments that have in-place permeabilities of 1×10^{-6} cm/sec to 1×10^{-7} cm/sec. The remaining area, mostly in the northern portion of the landfill, is underlain by the Nortonville shale member of the Kreyenhagen Formation and Domengine sandstone that have permeabilities of 1×10^{-4} to 1×10^{-5} cm/sec.

GEOLOGY

9. The surface and subsurface geology of the site has been evaluated based on field mapping, literature review, geophysical surveys (seismic refraction and vertical electrical sounding) and review of geologic logs from well borings.
10. STRATIGRAPHY - The landfill area is underlain by bedrock - Capay and unnamed formation, alluvium deposits and residual soils. The primary geologic units at the site are as follows:

Capay shale - The landfill is underlain by approximately 700 feet of low permeability siltstone and claystone of the Capay shale and an unnamed shale.

Domengine sandstone - The northern portion of the landfill is underlain by the Domengine sandstone which exhibits moderate permeability on the order of 1×10^{-4} to 1×10^{-5} cm./sec.

Other soils - The topsoil consist of alluvial and fanglomerate deposits. These deposits consist of sandy clay to clayey gravel having a maximum thickness of 15 feet along the southern flank of the valley, south of the landfill.

11. STRUCTURE - The main geologic structure is the Potrero Hills Anticline, this is a large geologic fold structure located along the western boundary of the Sacramento Valley within the northern Coast Ranges Province. The nearest active fault to the site is the Green Valley Fault, located 10 miles West of the site. The Hayward-Rodgers Creek Fault and the San Andreas Faults are located approximately 26 and 43 miles west of the site respectively. Additionally, an unnamed Fault crosses the center of the site. The investigation of this fault (Cooper-Clark and Associates, 1972 ; EMCON Associates, 1983 and 1985) conclude that the excavations show no evidence that the fault is active. This is not a known Holocene fault. Post depositional deformation of the bedrock has resulted in folding, fracturing, shearing and the formation of sandstone injection dikes into claystone and siltstone strata.

SURFACE WATER AND GROUNDWATER

12. SURFACE WATER - Seasonal runoff from the upstream valley is collected in a stock pond east of the facility for conveyance around the waste management unit in a perimeter channel and discharged to a natural swale west of the site. Surface water runoff from the landfill flows to the west and the northwest and eventually flows into the Hill Slough. Hill Slough is contiguous with Grizzly Bay and Suisun Bay. The Slough surrounding the Potrero Hills are subject to tidal influence and are considered part of the greater Suisun Marsh system of waterways. Various permanent and temporary facilities are used to divert and control on-site surface water. In active fill areas, temporary berms and ditches direct runoff away from the working face. Runoff from the Waste Management Unit is stored in sedimentation basins before release into the natural waterways.
13. GROUNDWATER - Groundwater occurs in the two main geological formations of the landfill, the Domengine Sandstone formation and the Capay and the unnamed formations. These two hydrostratigraphic units are not interconnected and also differ in their hydraulic properties. The groundwater level in the Domengine sandstone formation is approximately 40 feet

beneath the ground surface. When surface runoff infiltrates into the Domengine sandstone the water will migrate down vertically along the dip of the anticlinal formation. The area of the landfill underlain by the Domengine sandstone exhibits a moderate permeability of 1×10^{-4} to 1×10^{-5} cm/sec. Groundwater is also found in perched aquifer in the shallow alluvium flanking the northerly external slope of the Potrero Hills.

14. GROUNDWATER DEGRADATION - Areas at risk for potential groundwater degradation are the fracture zones within the weathered Capay shale and the Domengine sandstone, beneath the landfill.
15. BACKGROUND WATER QUALITY - Ground and surface water from most of the sampling locations in Potrero Hills landfill has an average pH of 7 and total dissolved solids that ranges between 3,000 to 30,000 parts per million. The groundwater found in Capay and unnamed formations is limited to fracture porosity in the cracks of weathered zones. These cracks continue down into the unweathered zone but they become smaller with depth, thereby holding lesser amount of water. This shallow groundwater is of generally good quality for most beneficial uses; however, the high sulfate and dissolved solids concentrations, together with the difficulty in obtaining useable quantities, makes the groundwater unacceptable as a drinking water supply as documented in 1983 EMCON Associates report of site investigation.
16. BENEFICIAL USES - Beneficial uses of the useable groundwater found in the surficial and alluvial deposits surrounding the Potrero Hills valley and of Hill Slough and Suisun Bay are:
 - a. Domestic water supply.
 - b. Agricultural supply.
 - c. Water contact recreation.
 - d. Non-contact water recreation.
 - e. Warm fresh water habitat.
 - f. Wildlife habitat.
 - g. Estuarine habitat.
 - h. Preservation of rare and endangered species.
 - i. Fish migration and spawning.

The discharger submitted the following reports which propose to construct and operate the landfill in accordance with the requirements of Chapter 15 and are hereby approved and incorporated into this order.

- i. Proposed Monitoring Program Potrero Hills Sanitary Landfill Solano County, California. (EMCON August 1992)
- ii. Report of Disposal Site Information For the Potrero Hills Landfill August 1992, revised April 1993.
- iii. 1992 Leachate Monitoring System Evaluation report, February 1993.

SLOPE STABILITY (Refer to Table 1, Slope Stability Analyses Summary)

17. As part of the geotechnical evaluation and design for the landfill, the discharger evaluated the static and seismic stability of the permanently exposed cut slopes, the toe berm and the final landfill slopes. A summary of the slope stability evaluation is shown on Table 1.
18. STATIC SLOPE STABILITY - The static stability of the permanently exposed cut slopes, the toe berm and the final landfill slopes was analyzed using SLOPE-II, a computer program commercially available through Boeing Computer Services (BCS, 1981). The program is based on the theory of limit equilibrium of forces and moments acting within the slope in question to determine the factor of safety. All stability results shown on Table 1 were computed using the simplified Bishop Method of analysis (Bishop 1955). The result indicates that the final slope has a minimum factor of Safety approximately 70% higher (2.6 vs 1.5) than required for long term stability of dams and that the exterior slopes of the PHLF is adequately stable. The strength parameters and soil properties used are friction angle, cohesion and total unit weight. Board staff has reviewed the strength parameters and soil properties used by the discharger in the stability analysis and finds that they appear reasonable. Thus the Board finds that the static slope stability analysis is acceptable.
19. PSEUDO-STATIC STABILITY - Pseudo-static stability were performed to determine the yield acceleration for the slope as a function of the assumed value of shear strength. The yield acceleration is defined as that pseudo-static coefficient corresponding to a factor of Safety equal to 1.0. The results of the yield acceleration values for PHLF vary between 0.3g and 0.38g, depending on the assumed shear strength. Yield

acceleration values in excess of 0.25g are uncommon, the high yield acceleration values for PHLF was probably due to the flatness of slope (4.1) and low unit weight of the refuse materials. The yield acceleration values were evaluated in a simplified dynamic analysis to estimate the displacement that could occur during a maximum probable earthquake.

20. DYNAMIC STABILITY - Ground Response and Deformation Analysis: Chapter 15 requires that "Class III waste management units be designed to withstand the maximum probable earthquake without damage to the foundation or to the structures that control leachate, erosion or gas". EMCON estimated maximum probable bedrock acceleration to be expected at the site due to earthquakes emanating from any of the nearby faults (i.e Green Valley, Haywards-Rogers Creek, San Andreas and Vacaville-Winters faults). The results presented in Table 1 indicates that the maximum probable bedrock acceleration expected to occur at the PHLF from each seismic source are lower than the maximum probable earthquake magnitude. Thus based on the seismic stability analysis and the requirements for a detailed Post Earthquake Inspection Plan, the Board finds that the seismic slope stability analysis is acceptable.

DESIGN OF WASTE MANAGEMENT UNIT

21. The Potrero Hills landfill is underlain by the Capay shale formation which are fractured in some areas and the Domengine sandstone. The entire landfill area shall be provided with a liner system and a leachate collection and removal system that meets Subtitle D and Chapter 15 requirements with the exception of Cells 1, 2, 3, 4, 5A, 5B, 6N, 6S, 7, 7E, 8 and 9 of Module 1 which were constructed to meet the requirements of Waste Discharge Requirement Order No. 85-121. The northern portion of the landfill underlain by the Domengine sandstone and other areas underlain by alluvium deposits must have an underdrain system where spring water need to be drained.
22. The site design maintains the existing pattern of westward drainage in the valley. The landfill surface is sloped to drain nominally from north to south. Areas of disturbed soil are sloped to drain into siltation control basins. The composting, wood waste shredding and concrete debris processing areas are sloped to drain into siltation control basins.
23. The landfill is being constructed with a landfill gas collection and recovery system. In the future electricity production from the extracted gas is planned.

24. The Regional Board adopted a revised Water Quality Plan for the San Francisco Bay Basin in September, 16, 1992 and this Order implements the water quality objectives stated in that plan.

MONITORING PROGRAM

25. The discharger proposes Water Quality Protection Standard pursuant to Article 5, Section 2550.2. The proposed WQPS consists of five elements: (1) Monitoring points (2) Constituents of concern (3) Concentration limits (4) Points of Compliance and (5) Compliance period.
 - a. This Order requires the discharger to install monitoring wells at appropriate locations approved by the Executive Officer along the downgradient landfill boundary limits at the point of Compliance. Wells GW2 and GW1 shall be properly destroyed. The upgradient proposed monitoring wells are considered appropriate.
 - b. Surface water shall be monitored at three monitoring points. One at the southern margins and the western margins of the WMU at sedimentation basins 1 and 2 and an upstream background sampling point.
 - c. The unsaturated zone shall be monitored in the northern parts of the landfill that will have refuse underlain by the Domingue Sandstone. The Unsaturated zone monitoring program shall be conducted to satisfy the requirements of Article 5, Section 2550.7.
 - d. The discharger shall analyze for the constituents of concern COCs and monitoring parameters as presented in Table A of the Discharge Monitoring Program for the PHLF.

CALIFORNIA ENVIRONMENTAL QUALITY ACT.

26. The Solano County Department of Environmental Management, as lead agency, certified a final Environmental Impact Report in March of 1984, in accordance with California Environmental Quality Act (Public Resources Code Section 21000 et. seq.) It is intended that the findings, prohibitions, specifications and provisions of this Order be consistent with the certified final Environmental Impact Report.
27. The final Environmental Impact Report found that the proposed

landfill and landfill activity, as approved by the County, could cause significant effect on water quality and may degrade the water quality unless appropriate mitigation measures are taken. Unmitigated, the potential impact to the water quality could occur as a result of:

- O. Potential impact to Suisun Marsh Waterways from runoff carrying sediments from excavated areas.
- O. Potential groundwater contamination due to contact with leachate.
- O. Surface runoff or leachate from active fill area or the composting and wood shredding areas could carry nutrients, heavy metals and organic chemicals into adjacent surface waters affecting beneficial uses.

28. a. Groundwater

Design and operation of the sanitary landfill based on natural geologic conditions and in accordance with Article 5, Chapter 15 and Subtitle D will ensure containment of landfill waste, minimize leachate production, and prevent adverse impacts on surface water and groundwater quality.

A liner system will underlie all areas at the landfill site beyond the present limits of waste placement. In areas where there is not a natural occurrence of low permeability clayey sediments, an underdrain system shall be installed in addition to the liner system.

Installation of a leachate collection drain system on the landfill. This includes the monitoring and removal of leachate, should any be produced.

Groundwater monitoring will be used to monitor the integrity of the containment structures, leachate collection system and control facilities.

b. Sedimentation

Sedimentation is to be controlled by the following measures:

Sediment control berm and basins placed downslope of the fill area.

Revegetation of landfill and excavation areas, as soon as feasible, to prevent erosion.

- c. Discharge of contaminated runoff or leachate from the site.

Construction of drainage improvements to direct surface waters away from solid waste disposal operations.

Covering of all completed landfill modules with a compacted soil cap to meet the cover requirements of Subtitle D.

Compliance with the regulations and standards contained in Subtitle D and Chapter 15 and waste discharge requirements adopted by the Board.

- 29. The Board notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
- 30. The Board, in public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that pursuant to authority in Section 13263 of the California Water Code the discharger its agents, successors and assigns may discharge waste at Potrero Hills landfill providing compliance is maintained with regulations adopted under Division 7 of California Water Code thereunder and shall also comply with the following:

A. PROHIBITIONS

- 1. The disposal of waste shall not create a pollution or nuisance as defined in Section 13050(1) and (m) of the California Water Code.
- 2. Waste shall not be placed in or allowed to contact ponded water from any source whatsoever.
- 3. Waste shall not be disposed of in any position where it can be carried from the disposal site and discharged into waters of the State or of the United States.
- 4. Leachate from waste and ponded water containing leachate or in contact with solid wastes shall not be discharged to waters of the State or of the United States.

5. Hazardous and designated wastes as defined in Sections 2521 and 2522 of Chapter 15, except for waste that is hazardous due only to its friable asbestos content, shall not be deposited at the site.
6. High-moisture-content waste (those containing less than 50% solids) other than water treatment and waste-water treatment sludges shall not be discharged into disposal area without prior approval by the Executive Officer. Such approval shall be granted only if there is adequate moisture holding capacity in the landfill based upon mass balances and previous monitoring of the relevant leachate control facility. A minimum solid-to-liquids ratio of 5:1 by weight must be maintained for the disposal operation overall. Furthermore, sludges shall not be discharged into disposal area unless they contain at least 20% solids if primary sludges, or at least 15% solids if secondary sludge, mixtures of primary and secondary sludges, or water treatment sludge.
7. The discharger, or any future owner or operator of the site, shall not cause the following conditions to exist in waters of the State at any place outside the waste management facility:
 - a. Surface Waters
 1. Floating, suspended, or deposited macroscopic particulate matter or foam.
 2. Bottom deposits or aquatic growths.
 3. Alteration of temperature, turbidity, or apparent color beyond natural background levels.
 4. Visible, floating, suspended or deposited oil or other products of petroleum origin.
 5. Toxic or other deleterious substances to be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife or waterfowl, or which render any of this unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
 - b. Groundwater

1. The groundwater shall not be degraded as a result of the solid waste disposal operation.
8. Leachate from wastes and ponded water containing leachate or in contact with solid waste shall not be discharged to waters of the State or the United States.

B. SPECIFICATIONS

1. All reports pursuant to this order shall be prepared under the supervision of a registered civil engineer, California registered geologist or certified engineering geologist.
2. Water used during disposal operations shall be limited to a minimal amount necessary for construction, dust control and fire suppression.
3. The site shall be protected from any washout or erosion of wastes or covering material and from inundation which could occur as a result of a 100 year 24 hour precipitation event, or as the result of flooding with a return frequency of 100 years.
4. Hazardous wastes, Designated wastes and Infectious wastes shall not be disposed of at this landfill. Non-hazardous, Inert wastes and Asbestos may be disposed of at this landfill provided that all regulations and provisions of the California Integrated Waste Management Board, California Department of Toxic Substance Control, local health agencies and County Land Use Permit requirements are complied with.
5. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources, shall not contact or percolate through wastes during disposal operation or during the life of the site. Drainage ditches constructed over the solid waste fill will be underlain with a minimum 5-foot thickness of earthfill, as described in Drawings 1-5 and on and on page 29-30 of the report, "Site Investigation and Development Study Potrero Hills Sanitary Landfill".
6. No waste may be placed on any cell or units unless underlain by a dendritic leachate collection and removal system as described in the discharger's submittal of February 1993.
7. Permanent leachate collection and removal system

facilities shall be constructed on the landfill as shown in discharger's 1992 Landfill Leachate Collection System Report submitted February 26, 1993. Measures shall be taken to ensure that leachate in the leachate collection system can flow freely into the leachate collection sumps. Measures shall also be taken to assure that the leachate collection sumps and extraction wells will remain operational permanently.

8. The leachate collection and removal system shall be maintained and operated to prevent the buildup of hydraulic head on the bottom of the landfill as well as the toe berm constructed along the west boundary of the fill area. The maximum permissible leachate level build up above the liner is 1 foot. This LCRS shall be inspected monthly, and any accumulated fluid shall be removed.
9. The Domengine sandstone portion of the fill area, must have a liner system, LCRS and an underdrain system consistent with Subtitle D and Chapter 15. The underdrain system shall drain water collected from near surface springs off-site by gravity. Unsaturated zone monitoring devices shall be installed beneath the liner.
10. The areas of the landfill underlain by the Capay and unnamed shale formations and any sand and gravel lenses must be provided with liner system and LCRS consistent with the requirements of Subtitle D and Chapter 15.
11. A geologic map and or a geophysical map of the Capay and unnamed shale shall be updated to delineate clear contact boundary between the Domengine sandstone and the Capay shale, the fracture zones and cracks in the Capay and unnamed shale.
12. The discharger shall assure that the foundation of the site, the solid waste fill, and the structures which control leachate, surface drainage, erosion and gas for this site are constructed and maintained to withstand conditions generated during the maximum probable earthquake.
13. As portions of the landfill are closed, the exterior surfaces shall be graded to a minimum slope of three percent in order to promote lateral runoff of precipitation. In addition, all completed disposal areas shall be covered with a minimum of 4 feet of cover and meet other applicable requirements as described in

Article 8 of Chapter 15.

14. The discharger shall operate the waste management facility so as not to cause a statistically significant difference to exist between water quality at the compliance points and the Water Quality Protection Standard (WQPS) in the Report of Proposed Monitoring Program of August 1992. The proposed WQPS will be evaluated and possibly modified after four quarters of Discharge monitoring data has been submitted. At any given time, the concentration limit for each constituent will be equal to the background value of that constituent as determined pursuant to Subsection 2550.5 Article 5 of Chapter 15.
15. In the event of a release of a constituent of concern beyond the Point of Compliance, the site begins a Compliance Period (Sect. 2550.6(a)). During the Compliance Period, the discharger shall perform an Assessment Monitoring Program and a Corrective Action Program.
16. The discharger shall install any reasonable additional groundwater and leachate monitoring devices required to fulfill the terms of any Discharge Monitoring Program issued by the Executive officer.
17. Interim cover shall be maintained over all waste, at all times, except for the active face area of the disposal operations and areas where additional solid waste will be deposited within 180 days or as provided for by the performance standards adopted by the California Integrated Waste Management Board.
18. Landfill gases shall be adequately vented, removed from the landfill, or otherwise controlled to minimize the danger of explosion, adverse health effects, nuisance conditions, or the impairment of beneficial uses of water due to migration through the vadose (unsaturated) zone.
19. The discharger shall maintain all devices or designed features, installed in accordance with this order such that they continue to operate as intended without interruption as provided for by the performance standards adopted by the California Integrated Waste Management Board.
20. The discharger shall provide a minimum of two surveyed permanent monuments near the landfill from which the

- location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the operation and post-closure maintenance period. These monuments shall be installed by a licensed land surveyor or registered civil engineer.
21. The Regional Board shall be notified immediately of any failure occurring in the waste management unit. Any failure which threatens the integrity of containment features or the landfill shall be promptly corrected after approval of the method and schedule by the Executive officer.
 22. The discharger shall notify the Regional Board at least 180 days prior to beginning any final closure activities. This notice shall include a statement that all activities will conform to the most recently approved closure plan and that the plan provides for site closure in compliance with all applicable regulations.
 23. The discharger shall submit, within 90 days after the closure of any portion of the landfill, a closure certification report which documents that the area has been closed according to the requirements of this order and Chapter 15. The discharger shall certify under penalty of perjury that all closure activities were performed in accordance with the most recently approved closure plan as defined by California Integrated Waste Management Board and in accordance with all applicable regulations.
 24. The discharger shall comply with all applicable provisions of Chapter 15 that are not specifically referred to in this Order.

C PROVISIONS

1. At least 10 days prior to commencement of filling of a specific area of the site the discharger shall submit a report indicating compliance with all Prohibitions, Specifications, and Provisions of this order. This shall include as-built construction diagrams.
REPORT DUE DATE: 10 DAYS PRIOR TO DISCHARGE OF WASTE
2. The discharger shall continue to submit quarterly monitoring reports in accordance with the attached Updated Discharge Monitoring Program.
3. The discharger shall periodically submit an updated

geologic map as described in Specification B.11. The fill area of the landfill beyond the areas presently having accepted waste must have a LCRS and a liner system that meets Subtitle D and Chapter 15 requirement. The landfill areas underlain by the Domengine sandstone and the alluvial deposits shall be provided with an underdrain system where spring water need to be drained. Vadose Monitoring devices shall be installed where the landfill is underlain by the Domengine Sandstone to monitor the leachate migration as required in Chapter 15 and Subtitle D.

REPORT DUE DATE: JANUARY 15 OF EACH YEAR

4. The discharger shall submit a detailed Post Earthquake Inspection and Corrective Action Plan acceptable to the Executive officer to be implemented in the event of any earthquake generating ground shaking of Richter Magnitude 7 or greater at or within 30 miles of the landfill. The report shall describe the containment features, and groundwater monitoring and leachate control facilities potentially impacted by the static and seismic deformations of the landfill. The plan shall provide for reporting results of the post earthquake inspection to Board within 72 hours of the occurrence of the earthquake. Immediately after an earthquake event causing damage to the landfill structures, the corrective action plan shall be implemented and this Board shall be notified of any damage. The report shall be due within three months of adoption of this Order.

REPORT DUE DATE: 3 MONTHS OF ADOPTION OF THIS ORDER

5. The discharger shall submit to this Board and to the California Integrated Waste Management Board, evidence of an irrevocable Closure Fund or provide other means to ensure closure and postclosure maintenance of of the waste management unit, pursuant to Section 2580(f) of Chapter 15 and Subtitle D. The Closure Fund must provide sufficient funds to properly close the landfill and for the post-closure monitoring, leachate management, and maintenance of the site. For purposes of planning the amount of the fund, the discharger shall assume a post-closure period of at least 30 years. However, the post-closure maintenance period shall extend as long as wastes pose a threat to water quality. The report shall be due within three months of adoption of this Order.

REPORT DUE DATE: 3 MONTHS OF ADOPTION OF THIS ORDER

6. The discharger shall submit Facility Construction Details acceptable to the Executive officer pursuant to the

specifications of this Order. The Details should provide workplans for development of various components and cells of the landfill, including detailed specifications for construction of liner systems and leachate collection and removal systems and should include Quality Assurance & Quality Control Procedures, (QA/QC), for all aspects of construction and installation. The workplans for construction of the liner and the leachate collection and recovery system should include detailed specifications regarding the sequence of construction of the various segments of the project. The Facility Construction Details must be determined to be consistent with this Order by the Executive Officer prior to placement of waste on the new cell.

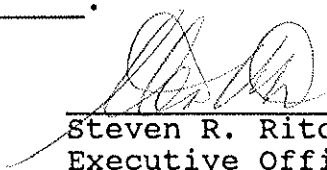
REPORT DUE DATE: 90 DAYS PRIOR TO ANTICIPATED CONSTRUCTION DATE

7. All reports pursuant to these Provisions shall be prepared under the supervision of a registered civil engineer or certified engineering geologist.
8. The discharger shall submit a Contingency Plan to be instituted in the event of a surface leak or spill from the leachate facilities. The discharger shall give immediate notification to the San Francisco Bay Regional Water Quality Control Board, the Local Enforcement Agency (LEA), and the California Department of Toxic Substances Control. The discharger shall initiate its contingency action plan to stop and contain the migration of pollutants to receiving waters. The report shall be due within three months of adoption of this Order.
REPORT DUE DATE: 3 MONTHS OF ADOPTION OF THIS ORDER
9. The discharger shall remove and relocate any wastes which are discharged at this site in violation of this requirements.
10. The discharger shall submit a Sludge Management Plan acceptable to the Executive Officer prior to accepting sludge for disposal at the landfill. The report shall be submitted within 3 months of adoption of this order.
REPORT DUE DATE: WITHIN 3 MONTHS OF ADOPTION OF THIS ORDER.
11. The discharger shall file with the Regional Board Discharge Monitoring Reports performed according to any Discharge Monitoring Program issued by the Executive Officer.

12. The discharger shall file with this Board a report of any material change or proposed change in the character, location, or quantity of this waste discharge. For the purpose of these requirements, this includes any proposed change in the boundaries of the disposal area or the ownership of the disposal site.
13. The discharger shall immediately notify the Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
REPORT DUE DATE: IMMEDIATE
14. The discharger shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.
15. This Board considers the property owner and site operator to have continuing responsibility for correcting any problems which arise in the future as a result of this waste discharge or related operations.
16. The discharger shall permit the Regional Board or its authorized representative, upon presentation of credentials:
 - a. Immediate entry upon the premises on which wastes are located or in which any required records are kept.
 - b. Access to copy any records required to be kept under the terms and conditions of this order.
 - c. Inspection of any treatment equipment, monitoring equipment, or monitoring methods required by this order or by any other California State Agency.
 - d. Sampling of any discharge or groundwater governed by this order.
17. This Board's Order Nos. 85-121 is hereby rescinded.
18. This requirements do not authorize commission of any act causing injury to the property of another or of the public; do not convey any property rights; do not remove liability under federal, state or local laws; and do not authorize the discharge of wastes without appropriate permits from other agencies or organizations.

19. This Order is subject to Board review and updating, as necessary, to comply with changing State and Federal laws, regulations, policies, or guidelines; changes in the Board's Basin Plan; or changes in the discharge characteristics.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on 7/21/93.


Steven R. Ritchie
Executive Officer

Attachments: Figure 1. Site Location Map
 Figure 2. Facility Map
 Table 1, Summary of Slope Stability Analyses
 Discharge Monitoring Program

TABLE 1

MINIMUM ACCEPTABLE FACTOR OF SAFETY

LOADING CONDITION	MINIMUM FACTOR OF SAFETY
Long term	1.5
Temporary	1.2 - 1.3
Simulated earthquake	1.0 - 1.1

STRENGTH ASSUMPTIONS USED FOR STABILITY ANALYSIS:

Strength Value No.	Mohr-Coulomb Parameters Friction angle(degrees)	Cohesion(psf)
1	26.5	0
2	20.0	390
3	15.0	680

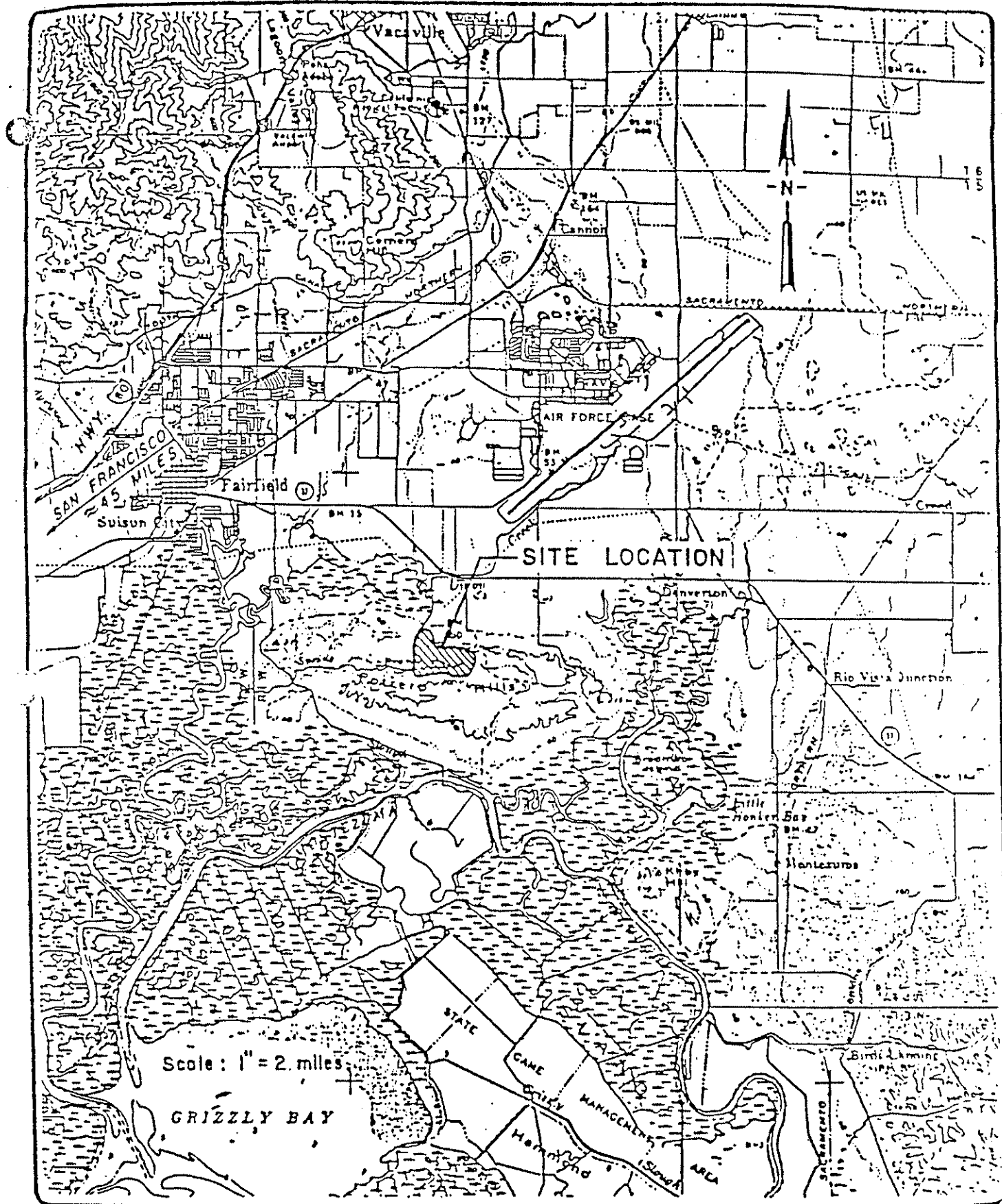
STABILITY ANALYSIS RESULTS - PHLF

Static	Loading condition	Factor of Safety for Strength value no.		
		1	2	3
Final (4:1)	Static	2.60	2.69	2.76
	Pseudo-static:			
	0.10g	1.73	1.79	1.86
	0.20g	1.27	1.34	1.39
	0.30g	1.01	1.07	1.11

SEISMIC PARAMETERS - PHLF

Faults or Seismic Source	Distance to site(miles)	Maximum Probable Earthquake Magnitude	Maximum Average rock Acceleration (g)
Green Valley	10	5.5	0.15
Hayward-Rodgers Creek	26	6.8	0.12
San Andreas Fault	43	8.3	0.18
Vacaville-Winters	14	6.5	0.20

ATTACHMENT A



EXPLANATION

- Ground-water monitoring well (39.08) Ground-water elevation (Fl.-MSL); measured 1/13/82
- Surface-water monitoring point
- Proposed ground-water monitoring point
- Ground-water elevation contour (Fl.-MSL)
- A— Cross section line (see Drawing 1)

Scale: 0 500 Feet

Base photogrammetry by Hammon, Jensen, and Wallen (12/21/00).

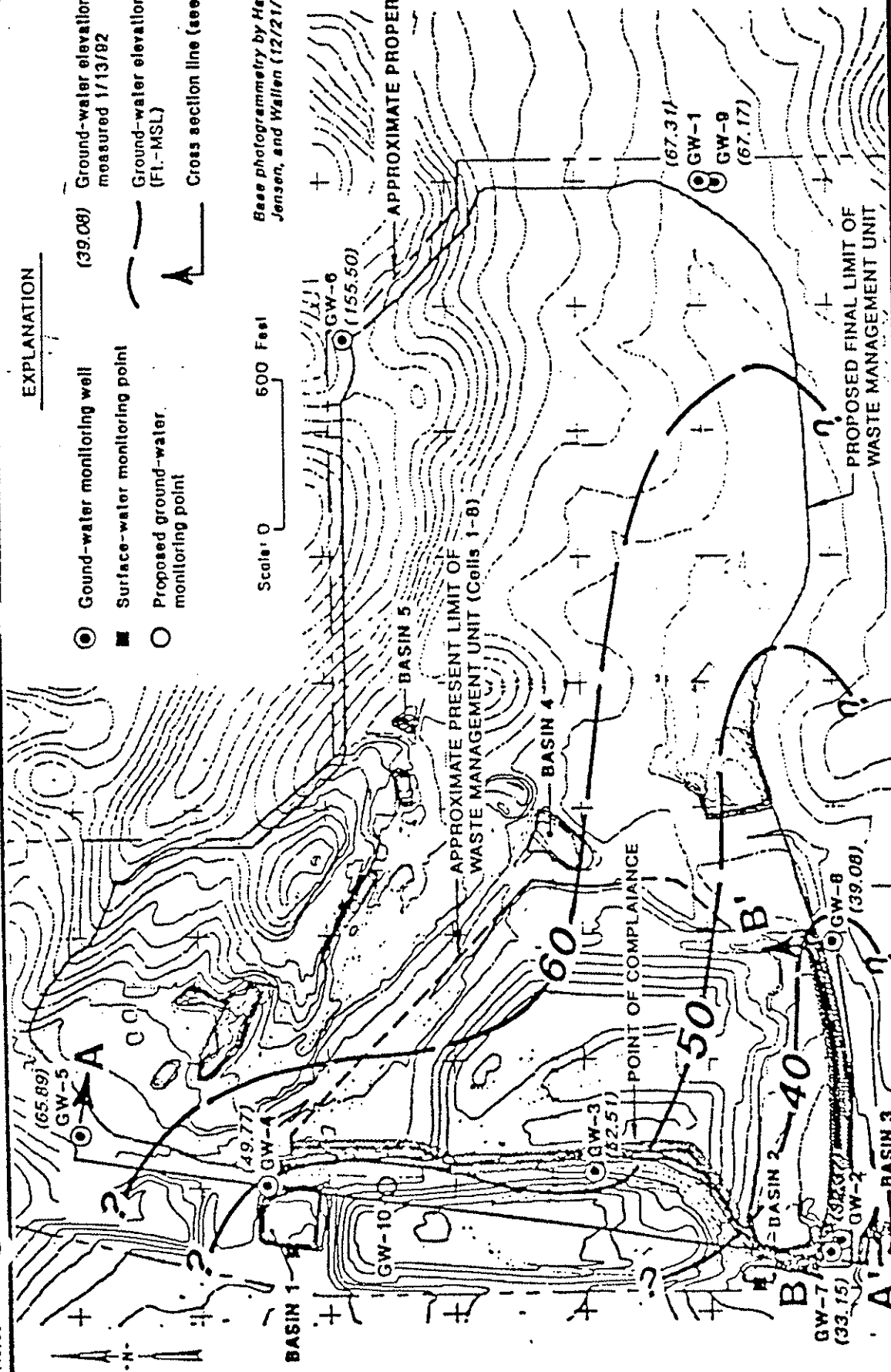
APPROXIMATE PROPERTY LINE

APPROXIMATE PRESENT LIMIT OF WASTE MANAGEMENT UNIT (Cells 1-8)

POINT OF COMPLIANCE

PROPOSED FINAL LIMIT OF WASTE MANAGEMENT UNIT

4/92



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

DISCHARGE MONITORING PROGRAM

FOR

POTRERO HILLS LANDFILL, INC.
POTRERO HILLS LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE
FAIRFIELD, SOLANO COUNTY

ORDER NO. 93-072

CONSISTS OF

PART A

AND

PART B

PART A

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No.73-16. This Discharge Monitoring Program is issued in accordance with Provision C.11 of Regional Board Order No. 93-072.

The principal purposes of a discharge monitoring program are: (1) to document compliance with waste discharge requirements and prohibitions established by the Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of standards of performance, and toxicity standards, (4) to assist the discharger in complying with the requirements of Article 5, Chapter 15 as revised July 1, 1991.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods and in accordance with an approved sampling and analysis plan.

Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITION OF TERMS

1. A grab sample is a discrete sample collected at any time.
2. Receiving waters refers to any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils. In this case the groundwater beneath and adjacent to the landfill areas, the surface runoff from the site, Spring Branch are considered receiving waters.
3. Standard observations refer to:

a. Receiving Waters

- 1) Floating and suspended materials of waste origin: presence or absence, source, and size of affected area.
- 2) Discoloration and turbidity: description of color, source, and size of affected area.
- 3) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
- 4) Evidence of beneficial use: presence of water associated wildlife.
- 5) Flow rate.
- 6) Weather conditions: wind direction and estimated velocity, total precipitation during the previous five days and on the day of observation.

b. Perimeter of the waste management unit.

- 1) Evidence of liquid leaving or entering the waste management unit, estimated size of affected area and flow rate. (Show affected area on map)
- 2) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
- 3) Evidence of erosion and/or daylighted refuse.

c. The waste management unit.

- 1) Evidence of ponded water at any point on the waste management facility.
- 2) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
- 3) Evidence of erosion and/or daylighted refuse.
- 4) Standard Analysis (SA) and measurements are listed on Table A (attached)

D. SAMPLING, ANALYSIS, AND OBSERVATIONS

The discharger is required to perform sampling, analyses, and observations in the following media:

1. Groundwater per Section 2550.7(b) and
2. Surface water per Section 2550.7(c)

and per the general requirements specified in Section 2550.7(e) of Article 5, Chapter 15.

E. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the discharger or laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

1. Identity of sample and sample station number.
2. Date and time of sampling.
3. Date and time that analyses are started and completed, and name of the personnel performing the analyses.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Calculation of results.
6. Results of analyses, and detection limits for each analysis.

F. REPORTS TO BE FILED WITH THE BOARD

1. Written detection monitoring reports shall be filed by the 15th day of the month following the report period. In addition an annual report shall be filed as indicated in F.3 below. The reports shall be comprised of the following:

a. Letter of Transmittal

A letter transmitting the essential points in each report should accompany each report. Such a letter shall include a discussion of any requirement violations found during the last report period, and actions taken or planned for correcting the violations. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

- b. Each monitoring report shall include a compliance evaluation summary. The summary shall contain:
 - 1) A graphic description of the velocity and direction of groundwater flow under/around the waste management unit, based upon the past and present water level elevations and pertinent visual observations.
 - 2) The method and time of water level measurement, the type of pump used for purging, pump placement in the well; method of purging, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of the pH, temperature conductivity and turbidity testing, well recovery time, and method of disposing of the purge water.
 - 3) Type of pump used, pump placement for sampling, a detailed description of the sampling procedure; number and description of equipment, field and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations.
- c. A map or aerial photograph shall accompany each report showing observation and monitoring station locations.
- d. Laboratory statements of results of analyses specified in Part B must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Board.
 - 1) The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and approved by the Executive Officer prior to use.
 - 2) In addition to the results of the analyses, laboratory quality assurance/quality control (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is less than 80%; the results of equipment and method

blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.

- e. An evaluation of the effectiveness of the leachate monitoring or control facilities, which includes an evaluation of leachate buildup within the disposal units, a summary of leachate volumes removed from the units, and a discussion of the leachate disposal methods utilized.
- f. A summary and certification of completion of all standard observations for the waste management unit, the perimeter of the waste management unit, and the receiving waters.
- g. The quantity and types of wastes disposed of during the past quarter, and the locations of the disposal operations.

2. CONTINGENCY REPORTING

- a. A report shall be made by telephone of any seepage from the disposal area immediately after it is discovered. A written report shall be filed with the Board within five days thereafter. This report shall contain the following information:
 - 1) a map showing the location(s) of discharge;
 - 2) approximate flow rate;
 - 3) nature of effects; i.e. all pertinent observations and analyses; and
 - 4) corrective measures underway or proposed.
- b. A report shall be made in writing to the Board within seven days of determining that a statistically significant difference occurred between a down gradient sample and a WQPS. Notification shall indicate what WQPS(s) has/have been exceeded. The discharger shall immediately resample at the compliance point where this difference has been found and re-analyze.
- c. If resampling and analysis confirms the earlier finding of a statistically significant difference between monitoring results and WQPS(s) the discharger must submit to the Board an amended Report of Waste Discharge as specified in Section 2550.8(k)(5) for establishment of an Evaluation Monitoring Program (EMP) meeting the requirements of Section 2550.9 of Chapter 15.

- d. Within 180 days of determining statistically significant evidence of a release, submit to the regional board an engineering feasibility study for a Corrective Action Program (CAP) necessary to meet the requirements of Section 2550.10. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern.

3. REPORTING

By January 31 of each year the discharger shall submit an annual report to the Board covering the previous calendar year. This report shall contain:

- a. Tabular and graphical summaries of the monitoring data obtained during the previous year; the report should be accompanied by a 5¹/₄" computer data disk, MS-DOS ASCII format, tabulating the year's data.
- b. A comprehensive discussion of the compliance record, and the corrective actions taken or planned which may be needed to bring the discharger into full compliance with the waste discharge requirements.
- c. A map showing the area, if any, in which filling has been completed during the previous calendar year.
- d. A written summary of the groundwater analyses indicating any change in the quality of the groundwater.
- e. An evaluation of the effectiveness of the leachate monitoring/ control facilities, which includes an evaluation of leachate buildup within the disposal units, a summary of leachate volumes removed from the units, and a discussion of the leachate disposal methods utilized.

4. WELL LOGS

A boring log and a monitoring well construction log shall be submitted for each sampling well established for this monitoring program, as well as a report of inspection or certification that each well has been constructed in accordance with the construction standards of the Department of Water Resources. These shall be submitted within 30 days after well installation.

Part B

1. DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS

A. WASTE MONITORING - Report Quarterly

1. Record the total volume and weight of refuse in cubic yards and tons disposed of at the site during each month showing locations and dimensions on a sketch or map.
2. Record a description of waste stream to include percentage of waste type, ie., Residential, Commercial, Industrial or Construction debris.
3. Record location and aerial extent of disposal of each waste type.

B. ON-SITE OBSERVATIONS - Report Quarterly

STATION	DESCRIPTION	OBSERVATIONS	FREQUENCY
V-1 thru V-'n'	Located on the waste disposal area as delineated by a 500 foot grid network.	Standard observations for the waste management unit.	Weekly
P-1 thru P-'n' (perimeter)	Located at equidistant intervals not exceeding 1000 feet around the perimeter of the waste management unit.	Standard observations for the perimeter.	Weekly

C. GROUND WATER and SURFACE WATER MONITORING - Report Quarterly

Groundwater and surface water shall be monitored as outlined below and on Table A (Attached) and shown on Figure A (Attached). Control Chart Approach shall be used for Statistical Evaluation of data as proposed by discharger (Each well is used as its own background).

Monitoring Points:

	Downgradient Point	Upgradient Point
Surface Water	Silt basin #2 & #1 (downstream)	SWU (upstream)
Groundwater	GW3, GW7, GW8, GW10, GW2A	GW4, GW5, GW6, GW9, GW1A
Capay shale	GW3, GW7, GW8, GW10	GW4, GW9
Domengine sandstone Alluvial deposit	GW2A	GW5, GW6, GW1A

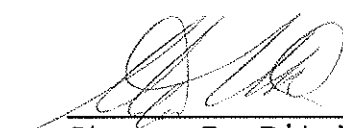
E. FACILITIES MONITORING

The Discharger shall inspect all facilities to ensure proper and safe operation once per quarter and report quarterly. The facilities to be monitored shall include, but not be limited to:

- a. Leachate Collection and Removal System
- b. Surface water impoundment
- c. Leachate handling facilities
- d. Perimeter diversion channels
- e. Leachate Management facilities and secondary containment.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. 93-072.
2. Is effective on the date shown below.
3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.



Steven R. Ritchie
Executive Officer

Date Ordered: July 21, 1993

Attachment: Figure A - Site Map
 Table A - Schedule for Sampling, Measurement, and
 Analysis

Table A - Discharge Monnitoring Plan, List of Analytical Parameters

Parameters	Method	Frequency	Reference
Water level	Field	Semi-annual	1
Temperature	Field	Semi-annual	1
Alkalinity, bicarbonate	310.1	Semi-annual (d)	2
Alkalinity, hydroxide	310.1	Semi-annual	2
Chemical oxygen demand	410.2	Quarterly	2
Chloride	9252	Semi-annual	3
Nitrate nitrogen	9200	Semi-annual (d) (c)	3
Total kjeldahl nitrogen	351.4	Semi-annual (d)	2
Total organic carbon	415.1	Semi-annual	2
Total phenols	9065	Semi-annual	3
Total dissolved solids	160.2	Semi-annual	2
Electrical conductivity	9050	Semi-annual	3
Total suspended solids	160.2	Semi-annual (c)	2
Turbidity	Field	Semi-annual (c) (b)	1
Volatile organic compounds	8010/8020	Semi-annual (b)	3
Volatile organic compounds	8240/8260	Annually (b) (d)	3
Semivolatile organic compounds	8270	Once in 5yr (b) (d)	3
Organochlorine Pesticides & PCBs	8080	Once in 5yr (b) (d)	3
Chlorophenoxy Herbicides	8150	Once in 5yr (b) (d)	3
Antimony	6010	Semi-annual (d) (b)	3
Arsenic	7060	Semi-annual (d)	3

PHLF ORDER No. 93-072
 UPDATED WASTE DISCHARGE REQUIREMENTS

Barium	6010	Semi-annual (d) (b)	3
Beryllium	6010	Semi-annual (d) (b)	3
Cobalt	6010	Semi-annual (d) (b)	3
Cadmium	6010	Semi-annual (d)	3
Total Chromium	6010	Semi-annual (d)	3
Copper	6010	Semi-annual (d)	3
Lead	6010	Semi-annual (d)	3
Nickel	6010	Semi-annual (d)	3
Selenium	7740	Semi-annual (d)	3
Silver	6010	Semi-annual (d)	3
Iron	6010	Semi-annual	3
pH	9040	Semi-annual	3
Leachate Elevation level	Field	Semi-annual (a)	1

1. Not Applicable
 2. Methods for Chemical Analysis of Water and Wastes,
 EPA600/4/79/029, revised March 1983.
 3. EPA SW-846
- Frequency and Sample Type:
- (a) monthly for first year, quarterly thereafter
 - (b) groundwater samples only
 - (c) surface water samples only
 - (d) constituents of concern

